

MISCELLANEOUS NOTES ON NEOTROPICAL FLORA, V.

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ESPELETIA CRISTALINENSIS Cuatr. sp. nov.

Caulirosulae visu griseo vel cinereo-virides usque 60 cm altae ad 100 cm latae, caule 40-60 cm alto 4 cm diametro, cum foliis marcescentibus tecto vel inferne exfoliato. Folia initialia et gemmae terminales dense albo-crispo-lanatae ad nervos longe villosolanae.

Folia rosularia adulta coriacea firma, 34-50 cm longa 5.5-8 (-10) cm lata, sessilia vel breviter pseudopetiolata. Lamina oblongo-oblanata vel oblonga, apice angustata acutaque, basin versus attenuata usque ad basin bene alata 1.3-1.7 mm lata, vel raro basi costa crassa fere exalata, margine visu integra minime revoluta sed dentibus minutis callosis mucroniformibus abaxiale recurvatis obsoletisque 4-12 mm distantibus vel magis remotis vel etiam adsunt; supra in juvenili dense crasseque albo-lanata pilis 5-6 mm longis tenuibus flexuosissimis intricatis vestita, adulta viridis, in sicco brunescens, subnitida, rugulosa, pilis brevioribus flexuosis seu crispis dilutis remanentibus sed costa plus minusve dense villosolana tantum in vetustis fere glabrata, nervis secundariis leviter conspicuis; subtus dense albo-cinereo-lanata (in juvenili indumento crassiori), costa crassa robusta valde eminenti dense adpresseque villosolana, pilis primum longissimis intricato ascendentibus, deinde brevioribus sed persistentibus, nervis secundariis prominentibus in angulo 60-70° ascendentibus, circa marginem furcatis inter se arcuato-anostomosantibus, nervis tertiis ramosis cum quaternis reticulo polygonali denso prominenti badii instructis sed cum pilis longis valde flexuosis et crispis intricatisque vestimentum crassum lanatum formantibus velato, alveolis profundis cum pilis minoribus strictis crispis candidisque dense repletis. Vagina robusta ovata apice subrotundata basi latior valde amplexans 3-4.5 cm alta 3.5-5.5 cm lata adaxiale apice albo-barbato excepto glaberrima multe prominuleque nervata, extus dense compressae albo-sericeo-barbata, pilis antorsis circa 5 mm longis.

Inflorescentiae axillares usque ad 12 in planta, 50-90 cm longae 12-24 (-40) cm latae, subcorymbiforme paniculatae capitula

breviter pedicellata ferentes. Axis robustus vel mediocris basi usque ad 2 cm crassus, inferne striatus superne subteres, maturitate purpurascens, primum pilis longissimis (10 mm) strictissimis sericeis ascendentibus subadpressis deinde intricatis flexuosis vel crispatis indumentum album gossypinum vel villosulo-lanatum, laxiusculum vel densiusculum, plus minusve deciduum tectus, inferne e basi foliosus, superne plerumque tantum dimidia parte ramosus, interdum ex basi ramosus. Folia sterilia 6-8 alterna folia rosularia similia sed breviora, 12-28 cm longa 1.7-4 cm lata vagina bene evoluta semiamplectenti, superne foliis fertilibus alternatis gradatim minoribus usque ad 5-4 x 2-1.7 cm. Rami inferiores tantum 2-3, remoti et longissimi (18-50 cm) patulo-ascendentes, sursum omnes rami ramulique copiosi, alterni, interdum oppositi, ultimi breves 2-3 furcati, omnes dense vel moderate albo-lanuginosi, sed vetusti saepe glabrati purpurascens plus minusve resinoso-glandulosi. Pedicelli 1-2.5 mm longi etiam lanati. Bractee subtendentes, inferiores foliaceae supra glabrae subtus lanatae basi longe lateque vaginato-amplectentes, 5-2 x 2-1 cm, supremae valde reductae usque ad lineares 10 x 2 mm.

Capitula mediocria radiata, 112-191 flores ferentia, ligulis amotis subglobosa 10-13 mm diametientia, circulo ligularum 23-30 (-35) mm, disco 9-13 mm diametro. Involucrum cupulatum dense fulvo-lanatum. Phyllaria sterilia 2-3-seriata, 5-8 (-10) crasse herbacea, 6.5-5 x 4-3.5 (-2), ovata acuminata acutaeque vel oblongo-ovata, extus dense lanata pilis 1-3 mm longis flexuosis intricatisque, intus apice piloso excepta glabra 5-10 nervata. Phyllaria fertilia exteriora 6.5-5 x 2.5-2 mm tenuiter herbacea ovato-oblonga vel oblonga acuta extus fulvo-lanuginosa, interiora 5-4.5 x 2-1.5 mm membranacea marginibus hyalinis, amplectentia, oblonga acuta dorso margineque sursum pilosa et glandulosa, ciliis erectis crassiusculis obtusis vel subclavatis 0.3-0.5 mm. Receptaculum convexum, paulo conicum, 4-5.2 mm latum 1.8-2 mm altum, glabrum. Paleae 4.3-5 x 2 mm amplectentes, membranaceae, hyalinae, 7-8 nervatae, oblongo-ovales, utrinque attenuatae, apice acutae, costa elevata pilosula, subapicem et apice marginibusque ciliato-barbulata, pilis ochraceis vel fulvis, obtusis, subclavatis 0.2-0.5 mm, et sparsis glandulis globosis subsessilibus praeditae.

Flores radii feminei 32-60 in capitulo, triseriati. Corolla lutea vel flava 8.5-11 mm longa, tubo 1-1.5 mm longo, dense piloso pilis hyalinis crassiusculis obtusis vel aliquis subobtusis 0.5-1 mm longis, plus minusve flexuosis, patulis vel ascendentibus intricatisque, ad faucem saepe crebrioribus longioribusque, apice tubi truncato sed interdum dente adaxiali minuto instructo; lamina lineari vel oblanceolato-lineari 1-1.5 mm lata 4-5-nervata, basim versus leviter attenuata apice acutiuscula edentata vel breviter bidentata, basi semiapperta abaxiale prope basin sparsis pilis et glandulis globosis minutis munita, adaxiale epidermo minute velutino-papillato. Stylus 3-4 mm longus ramis 0.6-0.8 mm. Achaenia exteriora 2-2.2 x 1.3 mm, obovoideo-oblonga basim versus angustata, triangulata, interiora

2.5 x 0.8-1 mm, laterale compressa, quadrangulata.

Flores disci pseudohermaphroditi 78-131 in capitulo.

Corolla luteo-viridula, 5-5.5 mm longa, tubulo 2-2.3 mm, sursum parce piloso pilis patulo-ascendentibus, obtusis, hyalinis 0.2-0.3 mm, interdum parvis glandulis capitatis intermixtis; limbo tubuloso sursum leviter ampliato, basi paulo pilosulo, lobis oblongo-triangularibus acutis 0.8 mm longis, margine incrassato adaxiale minute papillosulo, extus glabris, rarissime parcissimis pilis vel glandulis. Antherae circa 2 mm appendice ovato-acutata 0.3-0.4 mm longa. Stylus 5.5-6 mm. Nectarium tubulosum 0.8-1 mm, apice leviter incrassatum minute denticulatum. Ovarium sterile pediculiiformi, 0.3 mm.

Typus: Venezuela, Trujillo, Distrito de Boconó: Páramo de La Cristalina, 2500-2600 m alt, en lomas semiclareadas de monte andino. Porte gris verdoso claro o ceniciento verdoso, cogollo blanquecino; tronco erecto hasta 60 cm, 7 cm diam, cubierto de hoja marcescente, simple o ramoso sobre la base con varios grandes rosetones; 8-12 inflorescencias axilares robustas; hojas coriáceas flexibles o rígidas, verdoso grisáceas haz, claras envés; vainas semiamplectentes; lígulas amarillo vivo; flósculos amarillos, círculo ligular 30 mm, disco 13 mm; 17 Feb. 1973, J. Cuatrecasas, L. Ruiz-Terán, & M. López-Figueiras 28556; US, holotypus; MERF, isotypus. Ibidem Páramo de La Cristalina en La Cañada, 2550-2700 m, caulirosuleto, estípites 40 x 4 cm, tortuoso, desnudo abajo, hojas verde oscuras mates haz, cinereas envés. Inflorescencias axilares 60-90 cm, pedúnculos rojo púrpúreos con lana blanca, brácteas verde claras con lana leonada. Capítulos 35 mm diam, disco 15 mm. Lígulas amarillo pálidas o algo verdosulas; flósculos verdes en la yema, amarillo-verdosos en antesis, 29 Jul. 1971, L. Ruiz-Terán & M. López-Figueiras 2257; paratypi: US, MERF. Id Páramo de La Cristalina, en cañada boscosa, 2500-2600 m, róscula, tronco 40 cm alto, hoja gris blanquecina, inflorescencias mucho más largas, secas, 30 Oct. 1969, J. Cuatrecasas, L. Ruiz-Terán & M. López-Figueiras 28194A; US, MERF.

E. cristalinensis is closely related to E. jajoensis Aristg. having much smaller heads.

EPELETIA TAMANA Cuatr. sp. nov.

Arbor circa 4 m alta, trunco erecto ad 10 cm diametro, cortice brunescenti. Rami primarii 3-4 subverticillati, robusti arcuato-ascendentes paulo ramificati. Ramuli ultimi dense adpresseque albo-sericeo-villosi cum vaginis foliorum delapsorum persistentibus tecti, tantum extremo dense foliati, folia vaginantis congeste amplectentia fasciculata seu subrosulata ferenti. In plantis juvenilibus interdum ramis axillaribus tenuibus elongatis, sparse brevifoliatis instructis (foliis petiolatis lamina 18-7.5 x 3.4-2.1 cm, petiolo 3-1 cm longo, vagina annulari 2 cm longa adaxiale 8-10 mm alta).

Folia coriacea rigida petiolata, 30-53 cm longa. Lamina anguste oblanceolato-oblonga, apice attenuata acutaque, inferne

gradatim angustata et circa basim in pseudopetiolum angustata, margine revoluta visu integra sed minute denticulata dentibus mucroniformibus callosis 0.3-0.7 mm longis 5-15 mm inter se distantibus, recurvis, tantum abaxiale notatis; 24-47 cm longa 3.2-6 cm lata; supra plana, valde juvenilis pubescens mox glabrata costa tomentoso-villosa excepta, denique costa anguste impressa etiam glabrata, nervis secundariis transversis crebris et venulis minoribus subtiliter impressis visibilibus, superficie viridis plerumque tota glutinosa nitidaque; subtus crasse densissimeque ochraceo lanata, sed costa valde robusta supra bisulcata utroque latere bicostulata sulcataque adpresse villosa-sericea albicanti pilis acutis 1-2 mm longis antrorsis densis obsita, nervis secundariis transversis creberrimis, prominentibus, in adultis 5-8 per cm, 1-2 mm inter sese distantibus parallelis, angulo 90-85° a costam divergentibus, cum nervulis minoribus reticulum elevatum formantibus, alveolis profundis sicut reticulo indumento crasso crispo-lanato obtectis. Petiolus 2-4 cm longus ad costam reductus, 3-6 mm latus, utrinque ochroleuco-sericeo-villosus, basim triangulare dilatatus. Vagina coriacea triangulata amplexicaulis 2.2-3.5 cm longa basi 3-5 cm lata utrinque densissime adpresseque albo-sericeo villosa, pilis antrorsis acutis ad 3 mm longis abaxiale inter sese adherentibus velum superficiale formantibus.

Inflorescentiae terminales late corymboso-paniculatae, breviter robusteque pedunculatae basi valde foliosae, 40-60 cm longae 20-40 cm latae. Axis valde robustus, erectus, striatus, sicut ramis dense ochraceo-villoso-gossypinus, circa basim 2-3 cm diametro, pedunculo 6-12 cm longo albo sericeo villosa dense foliato foliis a caulinis similissimis, supra pedunculum ramosus ramis 8-9 alternis erecto-ascendentibus tertio superiori ramificatis capituliferisque. Foliis subtendentibus inferioribus a foliis sterilibus similibus sed brevioribus sessilibusque, 25-15 x 3-2 cm, supremis 8-3.5 x 2-1 cm. Pedicelli 1-3 (-3.5) cm longi erecti ochraceo villosa-lanuginosi, capitula erecta vel cernua ferentes; bracteis subtendentibus anguste ovato-lanceolatis acuminatis amplexentibus, 15-5 x 2-1 mm, breviter lanuginosis. Ramis juvenilibus etiam inflorescentiae axillares quam terminales minores potest praesentes.

Capitula mediocria radiata 60-100 flores ferentia, ligulis amotis globosa 10-12 mm diametro, circulo ligularum albo 19-25 mm, disco subhemisphaerico brunneo vel luteolo 8-10 mm diametro. Involucrum primum patellare denique cupulatum, viride, explanatum 11-12 mm diametens. Phyllaria sterilia 5-6 stellate disposita, 5-7 x 2-4 mm crasse herbacea ovato-oblonga acuminataque, acuta, leviter nervato-striata apice callosulo, plana, sed basi praecipue maturitate valde incrassata, extus villosula marginibus ciliatis apice callosulo calvo excepto, pilis ascendentibus ferrugineis vel fuscis crassiusculis obtusis subclavatis ad 0.5 mm longis. Phyllaria fertilia obovata subite acutata vel subrhombica 3.5-3.8 x 2.4-3 mm herbacea, plurivenosa, extus parce pilosa tertia parte superiori densiuscule barbata et margine-ciliata pilis fuscescentibus clavatis vel subclavatis

0.25-0.4 mm longis, maturitate coriacea, basi acrescenti et valde incrassata induratisissima gibbosa plus minusve curvata amplexentia achaenia subtendentia. Receptaculum ovato-conicum 3-4.5 mm diametro, 2.5 mm altum, glabrum. Paleae 3.3-3.5 mm longae 1.7-2.2 mm latae obovatae, apice obtuse triangulatae, subcucullato-amplexentes, membranaceae, dorso subcarinato costa et parvis nervis dorsalibus conspicuis marginalibus obsoletis, dorso subapicem et marginibus dense barbatis vel ciliatis pilis fuscis clavatis 0.05-0.2 mm.

Flores radii feminei 14-22 in capitulo, 2-seriati. Corolla alba, 7-8 (-9) mm longa, crassiuscule membranacea, tubo 0.8-1 mm longo dense piloso pilis patulis hyalinis, crassis, clavatis cellula terminali late obovoidea vel pyriformi, 0.1-0.3 mm longis; lamina elliptica vel oblongo-elliptica, 2.8-3.5 mm lata, 5-nervata, apice obtuse bidentata, adaxiale minutissime papillato-epidermica, extus sparsis pilis brevibus obtusis et sparsis glandulis oblongo-obovoideis. Stylus 2.5 mm longus ramis crassiusculis 0.7-0.9 mm longis. Achaenia nigra, exteriora obcordato-obovoidea argute triangulata, dorso paulo convexo, basi acuta, 2 x 1.7 mm, interiora 2.2 x 1-1.2 mm oblongo-obovoidea, basi acuta apice rotundata, 4-angulata vel subangulata plus minusve obliqua et curvata.

Flores disci pseudohermaphroditi 48-106 in capitulo. Corolla lutescens 3.7-4 mm longa tubulo 1.5 mm basi excepta sparsis vel copiosis glandulis pediculatis et sparsis pilis hyalinis crasse clavatis brevibus, limbo subcampanulato basin versus sparsis glandulis, lobis triangularibus acutis, 0.8 mm altis, margine incrassata adaxiale papillosa, extus subapicem breviter barbulatis pilis brunnescentibus crasse clavatis brevibus 0.1-0.2 mm longis ornatis. Antherae 1.5 mm longae basi sagittatae breviterque caudatae, apice appendice ovata acutata 0.3 mm longa. Stylus 4 mm. Nectarium tubulosum 0.6 mm longum minute obtuseque dentatum.

Typus: Venezuela, Táchira: Paramo de Tamá, extremo NW, cabecera semiboscosa de la quebrada El Reposo, 6-7 km N de Villa Páez, 2800 m alt.; arbolito 4 m, hojas bastante rígidas verde intensas a verde oscuras, lucientes en la haz, ocrelanoso-tomentosas envés, capítulos 25 mm diam total, disco 10 mm, lígulas blancas, 20-VI-1973 collect. L. Ruiz-Terán & M. López-Figueiras 8915. Holotypus, US; isotypi MERF. Ibidem loc. 2800-3000 m alt; tallo 40 cm, ramoso ápice, hojas coriáceas rígidas, frágiles, verde-amarillentas brillantes haz, ceniciento-verdosas envés, 16-I-73, Cuatrecasas, Ruiz-Terán & López-Figueiras 28327 (US, MERF). Ibidem El Cobre, 2700-2800 m alt. Arbolito, tronco 1 m, 4-5 ramas, hojas coriáceas, rígidas frágiles, verde amarillentas haz, ocráceas envés, inflorescencia (seca) terminal de las ramas, 15-I-1973, Cuatrecasas, Ruiz-Terán & López-Figueiras 28322 (US, MERF). Ibidem, in Andean forest, small tree, 15-I-73, Cuatrecasas, Ruiz-Terán & López-Figueiras 28321 (US, MERF).

ESPELETIA ARISTEGUIETANA Cuatr. sp. nov.

Caulirosula visu pallide viridis circa 70-90 cm ampla stipite 40 cm alto 5 cm diametro. Folia initialia et gemmae terminales mollissimae, dense crasse longeque villosa-sericeo-tomentosae.

Folia coriacea tactu crasse mollia paulo flexibilia, pallide lutescenti-viridia, sessilia, adulta rigida, 43-56 cm longa, 7.5-12 cm lata ad basim 2.3-3.8 cm lata. Lamina suboblanceolato-oblonga apice attenuata acutaeque basim versus sine sensu angustata, margine parce incrassato-revoluto integro, sed interdum abaxiale minutis dentibus callosis minimis obsoletis remotis munita; supra densiuscule subvelutino-tomentosa, pilis patulis vel leviter ascendentibus basi incrassata, extremo tenuissimo recto vel paulo curvato vel hamato, 0.5-1 mm longis, in vetustis magis curvatis, ad costam densissimis, rectis, antrorsis, adpressis, sericeis ad 3 mm longis, nervis secundariis bene conspicuis; subtus dense crassiter molliterque tomentosa, pilis 1.5-3 mm longis, inferne patulis, sursum tenuibus, curvatis vel inclinatis, ascendentibus, uniformibus tecta, sed costa crassa, multo prominenti densissime indumento antrorso, adpresso vel subadpresso, sericeo, oblecta, nervis secundariis prominentibus 8-20 mm inter se distantibus leviter arcuato ascendentibus in angulo 60-70° (50-75°), prope marginem magis arcuatis vel furcatis anastomosantibus, nervis tertiis elevatis irregulariter transversis cum quaternis et minoribus reticulo minuto, prominulo, instructis. Vagina robusta subtrapezoidali circa 3-3.5 cm longa et 4-5 cm lata, adaxiale glabra plurivenosa, abaxiale longe fulvo-sericeo-barbata.

Inflorescentiae axillares, valde robustae 70-80 cm longae, circa 30 cm amplae cymoso-paniculatae, dichasiales, capitulis mediocribus radiatis pedicellatis instructae. Axis inferne validus 2-2.5 cm diametro, fistulosus, cylindraceus, argute striatus tertio inferiori simplici tantum basi pari foliorum breviter connatorum, dense albido-tomentosus vel villosus-tomentosus, primum pilis rectis patulo-ascendentibus 1-2 mm longis, vel longioribus (ad 5 mm), plus minusve flexuosis, vetustus indumento brevi lanuginoso pilis crispo-lanatis tectus. Folia basilaria rosulantia similima 26-28 x 4.5 cm, folia medalia 13-20 x 3-5 cm. Ramificationes principales duae, ramis oppositis, inferioribus circa 40 cm longis, robustis tomentosus tantum extremo 2-3-plo divisus, proximis paulo minoribus, ramis tertiis 5-8 cm longis 2-3 plo-ramulosus. Ramuli ultimi oppositi vel alterni, 3-1 capitula pedicellata ferentes. Pedicelli 1.5-3 cm longi ebracteati, sicut ramusculi dense tomentoso-villosi, pilis 2-3 mm longis, basi patulis, extremo tenuibus ascendentibus plus minusve intricatis. Folia subtendentia superiora brevia 3-4 x 1-1.3 cm, oblonga acutiuscula, suprema bracteosa linearia, 1-1.5 cm longa 1.5-2 mm lata, densiuscule tomentoso-villosa.

Capitula mediocria radiata 112-127 flores ferentia, ligulis amotis subglobosa, 10-14 mm diametentia, circulo ligularum 24-28 mm, disco 10-11 mm diametro. Involucrum cupulatum, dense

fulvo subadpresse villosum. *Phyllaria* *sterilia* 2-3-seriata, 10-11, crasse herbacea, ovato-oblonga acuminata acutaeque, 6-5 x 3.5-2.7 mm, extus dense subadpresseque villosa, pilis 1-2 mm longis acutis rectis vel fere rectis ascendentibus, intus glabra nitida, 5-7 nervis plus minusve impressis. *Phyllaria* *fertilia* exteriora 6-5 x 2.5-2.2 mm, magis oblonga, acute attenuata, extus densiuscule adpresseque fulvo-villosa, interiora tenuiora marginibus hyalinis, amplexantibus, circa 4.5-2-1.8 mm, sursum dorso villosa, pilis erectis rectis acutis, usque ad 0.5 mm longis. Receptaculum convexum fere conicum, 5-6 mm diam, 2 mm altum, sparse pilosum, pilis strictis, acutis, brevibus, ad 0.5 mm. Paleae 5-5.2 x 2 mm, oblongae vel ovaes, basi paulo angustatae, apice attenuatae, acutiusculae, amplexantes, costa elevata, antrorso pilosula alteris nervis tenuibus, extremo dorso fulvo-barbulato cum margine ciliato, pilis erectis, rigidulis ad 0.6 mm; in vetustis basi valde incrassata calloso-gibbosa.

Flores radii feminei 38-42 in capitulo, biseriati. Corolla lutea 10-11.5 mm longa, tubo 1.2-1.5 mm longo dense flexuoso-piloso, pilis hyalinis, crassiusculis, subacutis vel subobtusis, 0.4-1 mm, curvatis vel rectis, subpatulis vel ascendentibus, intricatis, apice adaxiale edentato; lamina lineari 1.4-1.7 mm lata, apice obtusiuscule 2-3-dentata, 5-nervata, basi abaxiale parce pilosa excepto glabra, adaxiale minute velutino-papillosa, basi apperta. Stylus 4 mm ramis 1.5-2 mm, linearibus. Achaenia atra, exteriora obovoide oblonga, triangulata, dorso convexo, incurvato, basi leviter angustata, leviterque callosa, 2-2.2 x 1.4-1.1 mm, interiora oblonga, basi paulo attenuata, subquadrangulata, lateraliter leviter compressa, 2.2-2.4 x 0.8-0.9 mm.

Flores disci pseudohermaphroditi 74-86 in capitulo. Corolla lutea 5.2-5.6 mm longa, tubulo angusto 2-2.2 mm longo, glabro vel apice parcissimis pilis, limbo tubuloso-infundibuliformi, tantum basi parvis pilis subacutis, 0.2-0.5 mm, lobis triangularibus 0.7-0.9 mm longis, margine adaxiale papillosulo, extus glabris vel raro parcissimis pilis. Antherae 2.4 mm longae. Stylus 5.5-6 mm. Nectarium tubulosum 0.7 mm.

Type: VENEZUELA, Trujillo: Páramo de La Cristalina in a bushy ravine, 2500-2600 m, caulirrosuleto, tronco 40 cm alto, inflorescencias mucho más largas que las hojas, lígulas amarillas, 30 Oct. 1969, J. Cuatrecasas, L. Ruiz-Terán & M. López-Figueiras 28194 (US, holotypus). Ibidem, Páramo de la Cañada, 2550-2700 m, acaulirrósula 70 cm, hojas coriáceas algo flexibles, vainas con pelos leonados, estéril, 29 Jul. 1971, Ruiz-Terán & López-Figueiras 2258 (US, MERF). Ibidem loc., sterile, large, young, sericeous green rosette, leaves coriaceous, thick, pale green and somewhat velvety aspect both sides with white midrib and yellow-whitish sericeous secondary nerves beneath, bases shining, tawny sericeous, 17 Feb. 1973, Cuatrecasas, Ruiz-Terán & López-Figueiras 28559 (US, MERF).

This species is dedicated to Dr. Leandro Aristeguieta, distinguished botanist, author of the *Compositae* of the *Flora*

of Venezuela. He has contributed greatly to the knowledge of the genus *Espeletia* with collections, descriptions of new species, and with his excellent treatment of the genus comprising 45 species for Venezuela.

E. aristeguietana is an outstanding species in the genus, being one of the few species in Venezuela with very definite dichasial inflorescences.

ESPELETIA BOYACENSIS Cuatr., sp. nov.

Acaulirosulae 40-60 cm altae visu cinereo-virides, nitentes argentatae, caule crasso brevi subterraneo vel paulo emergenti cum foliis rosulatis vaginantibus congestis tecto.

Folia coriacea crassiuscula rigidula, vetusta rigida 16-45 cm longa, 1.5-3 (-4) cm lata, visu sericea argentata praecipue juvenilia valde nitida; lamina oblanceolata vel lineari-lanceolata, basin versus in pseudopetiolum 2-8 cm longum 6-11 mm latum, valide costatum, anguste alatum vel exalatum, attenuata, basi ampliata et in vaginam amplam producta, margine integerrima; utrinque densissime adpresseque sericeo-villosa, pilis 2.5-3 mm longis inferne dilatatis basi incrassatis patulisque infra tertium geniculato-arcuatis ceterum strictis acutissimis antrorso-adpressis, vestimentum crassiusculum laevem nitidum visu in juvenile nitidissime argentatum tactu leporinum formantibus; supra tantum costa notata planiuscula reliqua superficie levissima, subtus costa robusta prominenti, sulcata, elevato-bicarinata, circa basim solide robustiori, nervis secundariis supra invisibilibus (etiam indumento amoti), subtus tenuissimis paulo conspicuis vel obsoletis 5-10 mm distantibus, in angulo (30-)40-60° ascendentibus, nervulis minute prominuleque reticulato-alveolatis alveolis strictissimis, cum indumento omnino tectis. Vagina coriacea oblongo-ovata vel oblonge subtrapezoidea apice subrotundata basi truncata, 30-45 cm longa, 25-55 mm basi lata, adaxiale tenuissime multivenosa, apice dense sericeo-barbata cetera glaberrima, abaxiale dense adpresseque sericeo-longibarbata pilis strictis acutis fulvescentibus ad 10 mm longis.

Inflorescentiae axillares plurae folia valde excedentes 50-200 cm altae 10-60 cm latae, laxae, plus minusve floribundae, dichasiales, saepe cymoso-thyrsoideae, foliis brevibus sicut ramis oppositis rare aliquot alternis. Axis inferne robustus basi ad 1-2 cm diametro sursum angustior, erectus vel reclinatus, argute striatus dense subadpresseque albo sericeo-villosus, sursum sicut ramis ramusculisque fulvo-villosus, pilis acutis rectiusculis ascendentibus circa 1.5-2 mm longis, inferne tenuioribus longioribusque circa 2 mm, prope basim ad 10 mm, densius longeque barbatam, basi 1-2 paribus foliorum quam rosularibus textura similorum sed valde minoribus limbo 11-20 x 0.6-2 cm, vaginis membranaceis 3-5 cm longis plus minusve longeconatis axem congeste cingentibus, saepe dimidia parte vel duobus tertiis inferioribus indivisus 1-3 paribus foliorum remotis sterilibus foliis 14-6 x 2-0.6 cm connato-vaginatibus munitus,

dimidia vel tertia parte superiori ramosa, vulgo 5-6 paribus ramorum oppositorum exceptione 4-3 paribus instructus, foliis subtendentibus bracteosis oblongis, sessilibus basi amplexentibus breviter connatis, inferioribus 8-4 x 1.5-2 cm, sursum gradatim brevioribus, superne lineari-lanceolatis acutis antrorse fulvo-villosis, adaxiale glabrescentibus ad 10 x 2-3 mm. Rami elongati semi-ascendentes, inferiores quam alteri longiores sed non attingentes, saepe thyrsiforme dispositi aliquando proximales distales attingentibus ad modum pseudocorymbi; sursum rami dichasiale 1-2-plo divisi ramuli 2-8 cm longi graciles dense fulvo-villosi vel brunnei, ultimi saepe 3-capituliferi raro duobus vel singulo capitulo instructi. Pedicelli maturi 1-6 cm longi, bracteis subtendentibus lineari-lanceolatis amplexentibus antrorso-villosis intus glabrescentibus.

Capitula mediocria radiata 106-206 flores ferentia, ligulis amotis semiglobosa, 12-15 mm diametentia, circulo ligularum 18-25 (-30) mm, disco 10-14 mm diametro. Involucrum anthesi patellare dense fulvo vel fusco-villosum. Phyllaria sterilia 7-9 (-12), herbacea crassiuscula ovata, acuminata acutaeque, 11-6 x 8-4 (-3) mm, saepe 2-3 basi coalita, extus densissime adpresseque antrorso-villosa, pilis sericeis rectiusculis ad 2 mm longis fulvis vel fuscis, intus glabra plurivenosa; interiora 10-6 (-5) x 5-3.5 (-2.5) oblongo-ovata extus adpresse sericeo-villosa intus plurivenosa. Phyllaria fertilia exteriora 7-4 x 3-2.5 tenuiter herbacea, obovato-oblonga, acuta, dorso adpresse piloso, interiora 5-4 x 2.5-1.5 tenuiora, subhyalina, nervata, amplexentia, sursum fusco vel fulvo-barbato-ciliata, pilis erectis 0.7-1 mm. Receptaculum 4-6 (-7) mm diametro convexum vel subconicum 1.5-2.3 mm altum glabrum vel sparsissimis minutis pilis. Paleae subobovato-oblongae vel ovales subite acutatae, hyalinae, plurivenosae, amplexentes 5-4 x 2 (-1.7) mm, sursum margine ciliatae extremo fusco-barbulatae, pilis erectis ad 1 mm, fulvis vel fuscis, et glandulis subglobois pediculatis sparsis vel copiosis intermixtis.

Flores radii feminei ligulati 39-86 (-96) in capitulo, 3(-4)-seriati. Corolla lutea 7-12 mm longa, tubo (1-) 1.5-2 mm, stricto, dense piloso, pilis patulis vel subascendentibus 0.2-0.8 mm, inferne incrassatis apice longius acutis vel brevibus obtusis, apice dente adaxiali uno vel duobus pilosis dentiformibus vel linearibus interdum usque ad 2 mm longis; lamina lineari-oblonga 1.2-2.2 mm lata, deorsum leviter angustata, apice obtuse 2-3-dentata, 4-5-nervata, adaxiale glabra minutissime epidermato-papillosa, velutina, abaxiale sursum sparsis basi copiosis pilis praedita. Stylus 3-4 mm longus, ramis linearibus 1.5 mm. Achaenia exteriora obovato-oblonga triangulata, apice truncato-rotundato basi subite acutata, dorso plano-convexo 2 x 1.2-1.3 mm, interiora oblonga quadrangulata 2-2.5 x 0.8-1 mm.

Flores disci pseudohermaphroditi 57-128 in capitulo. Corolla lutea 5-6 mm longa, tubulo angusto 2.2-2.5 (-3) mm, glabro vel subglabro seu apice parvis pilis ascendentibus acutis

0.1-0.3 mm, limbo tubuloso-infundibuliformi basi piloso pilis acutis vel subacutis 0.1-0.3 mm, lobis oblongo-triangularibus crassiuscule marginatis, 1-1.4 mm longis extus piloso-barbulatis pilis 0.2-0.4 mm, et sparsis vel copiosis glandulis subglobosis, marginibus adaxiale papillois. Antherae circa 2 mm longae basi breviter acuteque sagittatae, appendice apicali acute ovata 0.4-0.45 mm longa. Stylus 5-6 mm longus, apice conico emarginato spisse papilloso, subapice longius denseque papilloso-pilosus. Nectarium tubulosum breviter dentatum 0.7-0.8 mm longum.

Typus: Colombia, Boyacá: Below the Páramo de Guantiva, southern slope of Alto de Canutos, vereda El Bosque, open páramo 3350 m, acaulirosetta, inflorescences up to 2 m, rays yellow, chromosome Number $n = 19$, 13 Sept. 1969, Cuatrecasas & Rodríguez 27759 (COL, US). Selected representative collections: Cuatrecasas 10346 (COL, F, US), Cuatrecasas & García Barriga 9753 (COL, F, US), Cuatrecasas 10367 (COL, F, US), 10401 (COL, US), 10432 (COL, F, US).

Distribution: NW section of the department of Boyacá and the connected highlands of Santander, along the series of paramos between Tunja and Susacón, mainly around the massif of Páramo de Guantiva and its orographic branches. *E. boyacensis* can be found in slightly humid depressions, and more often on relatively drained slopes where it can develop gregariously on great stretches between 3000 and 3600 m.

E. boyacensis has been confused for a long time with *E. argentea* fma. *phaneractis*, on account of their silvery shining leaves, and the similar inflorescences. We cannot find substantial differences between the two species in the structure and size of flowers, capitula, and inflorescences, because there is some margin of variation, especially in size, in both species. However, *E. boyacensis* has a tendency to have larger heads and longer rays than the radiate form of *E. argentea*. A more positive distinction can be found in the quality of the indumentum of the inflorescence branches; the hairs, antrorsely oriented, are somewhat shorter and straighter in *E. boyacensis*, while in *E. argentea* the hairs and their cells are longer, thinner and flexuose producing a slightly lanugineous covering. The basic distinctiveness of *E. boyacensis*, in contrast to *E. argentea*, is in the structure of the leaves. These are lanceolate or oblanceolate in outline, and strongly narrowed into a thick petiole. The base of the petiole is abruptly enlarged into a broad, contrasting sheath. The lamina is thick and rather rigid, in contrast to the thinner and flexible leaves of *E. argentea*. The leaf trichomes in *E. argentea* are shorter and more adpressed, being more flattened on the surface than in *E. boyacensis*. In the latter the hairs are longer, thicker and more abundant making the leaves cinereous-greenish and sericeous in the adult stage, but without the ironed-silvery shine of the *E. argentea* leaves. It should be noted that the young leaves of *E. boyacensis* are very adpressed, whitish, argentate sericeous, and often these are the

only ones represented on herbarium sheets.

ESPELETIA ARGENTEA fma. *PHANERACTIS* (Blake) Cuatr. nov status.

Espeletia argentea subsp. *phaneractis* Blake, Contr. U. S. Nat. Herb. 22(8): 603. 1924.

Type: Pennell 2522 from Zipaquirá, Colombia. Holotype: US; isotypes: F, GH, MO, NY.

Distribution: Páramos of Cundinamarca and bordering slopes of the department of Meta, Colombia.

For purposes of contrast with *E. boyacensis* a description of the leaves of *E. argentea* is given below.

Folia chartacea flexibilia tactu mollia, 25-50 cm longa, 1.8-3 (-4) cm lata, visu sericea argentata nitidissima; sessilia, ensiformia vel linearia, sursum saepe leviter oblanceolata apice acutata, deorsum sine sensu paulo vel obsolete angustata, interdum basin versus leviter ampliata, semper lamina usque ad basim utroque latere costae bene evoluta, latitudine tertio superiori maxima 1.8-3 (raro ad 4) cm, parte media 1.2-2.5 cm, basi 1.2-2.7 cm lata, margine integerrima; utrinque densissime adpressisimeque sericeo-villosa, pilis 1-1.5 mm acutissimis basi crassiusculis patulis supra basim geniculatis attenuatis et antrorso adpressis, vestimentum laevem, nitidum visu argentatum tactu leporinum formantibus; costa solum notata, supra plana subtus moderate prominenti deorsum bisulcata ad basim latiori, nerviis secundariis supra absolute obsoletis subtus obsoletis vel levissime tenuissimeque visibilibus in angulo 20-30° (15-40°) ascendentibus, inaequaliter 4-8 mm distantibus extremis inconspicuis, nervulis minute leviter prominuleque reticulato-alveolatis cum indumento omnino tectis. Vagina coriacea oblonga, apice lamina aequilateris vel deorsum leviter dilatata, adaxiale tenue multivenosa glabra tantum apice longe villosa excepto, abaxiale densissime longeque fulvescenti sericeo-villosa barbataque, pilis ad 10 mm longis strictis acutis ascendentibus munita.